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A National Environmental/Energy Workforce Assessment. Louisiana

National Field Research Center, Inc, Iowa City, Iowa

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A National Environmental/Energy Workforce Assessment

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16. ABSTRACT

This study is one of 70 volumes assessing the workforce needs (manpower needs) for pollution control and abatement in the United States for the five-year period of 1976 through 1981. Seven fields for pollution control — air, noise, pesticides, potable water, radiation, solid waste, and wastewater — are analyzed, together with energy-related programs currently accentuated by the national effort to solve energy supply problems.

Designed as Phase I of a three-phase program, the complete assessment includes the following volumes: one each for the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands; one for each of the ten EPA regions; a one-volume National Abstract; a volume on National Legislation; a volume on Business and Industry; and a four-volume National Summary. The information was gathered through extensive personal interviews with responsible federal, state, and local officials in every state; with officials of representative private industrial and commercial firms; and with representatives of national industrial and trade organizations.

Phase II will develop a broad national inventory of the entire range of post-secondary and higher education training offered in the pollution control and energy areas cited above, and Phase III will offer demonstrations for curriculum changes or modifications which appear necessary to assure an adequate and properly trained national environmental/energy workforce.

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WORKFORCE ASSESSMENT

for

LOUISIANA

Conducted by:

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Under Grant from:

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

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PREFACE

The research and development of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project was conducted under the aegis of the U.S. Environmental Protection Agency by the National Field Research Center, Inc., Iowa City, Iowa, and the Denver Regional Office. This report discusses the State of Louisiana and is one of five state reports within Federal Region VI.

The State of Louisiana Report presents an overview of the current workforce, projections of workforce requirements (1976-1982), training and certification, and career potential in environmental pollution control and abatement. The environmental areas depicted within this report are: air, noise, potable water, pesticides, solid waste, waste water, and energy conservation/conversion.

FOREWORD

This State report is a product of Phase I of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project in Louisiana. The information contained within this report was obtained by extensive on-site interviews and research of project related materials. The information retrieval was conducted through representative federal, state, and when time allowed, local agencies. Telephone and written surveys were utilized as a secondary research source.

Data which are not documented herein are representative of the best professional judgements of experts currently working in the field.

This study is designed specifically for use as a reference tool at the federal regional level as well as at the state level. It is anticipated that the people of the State of Louisiana will be the beneficiaries of this endeavor.

National Environmental Energy Workforce Assessment

Phase I

LOUISIANA

State Summary

I. AIR

The State of Louisiana does not have widespread and serious air pollution problems. There are several densely populated areas in the state which contribute to the decline of air quality in the particular area. Problem areas are Baton Rouge, New Orleans, the corridor which extends along the Mississippi between these two cities, and the Lake Charles-Westlake area. One of the major factors contributing to the relative lack of serious air quality problems is the utilization of clean natural gas for power generation and space heating. Since 1964, the Louisiana Air Control Commission has been the exclusive agency for control of air pollution in the state. The Air Control Commission is contained within the Division of Health Maintenance. The Bureau of Environmental Health, Air Control Section is the responsible body of the Division.

Personnel have estimated a no growth pattern for the Air Quality Section over the next three to five years, although program activities and responsibilities are increasing. The no growth projection is predicated on restricted state funding.

The Louisiana Attorney General's Office has indicated that the state's air pollution laws are difficult to enforce because they were written in such broad terminology. The state statutes currently define violation of pollution standards in a way which leaves the state with limited enforcement capabilities.

II. NOISE

Currently, in Louisiana there is no state legislation regarding noise pollution control and abatement. Because no legislation exists, there is no agency with authority to direct a noise program on the state level.

Due to the fact that the state does not conduct a noise pollution control and abatement program, there is no workforce to profile at this level. There are two cities which currently have municipal noise ordinances. These communities are New Orleans and Baton Rouge.

Ordinarily, the workforce at the local level and in the private sector, also, is composed of persons who are utilized in more than one area. For example, law enforcement officials are the usual major component of this workforce and these personnel have other responsibilities apart from noise pollution control and abatement.

The noise pollution control and abatement field in Louisiana will see minor increases within the next few years. As populations increase and people become more aware of the dangers to health of noise pollution, a workforce will emerge.

Career opportunities will be exceedingly limited in this field in Louisiana at least until 1980. By the early 1980s, programs on the municipal level and in private industry will begin to develop which should present increased opportunities.

III. PESTICIDES

The state lead agency in Louisiana for regulating the use and control of pesticides is the Department of Agriculture. The Bureau of Entomolcgy Services within the Department has responsibility for administering the Structural Pest Control Law and regulations; the Bureau of Technical Services administers the Louisiana Pesticide Control Act, which is more agriculturally related.

The Bureau of Technical Services within the Department of Agriculture has been designated as responsible for pesticide applicator certification and training. Recent training and certification activities have been carried out jointly by the Bureau and by the state Extension Service. The Bureau works closely with agricultural personnel at Louisiana State University in this regard.

The workforce profile includes 34 persons at the state level, 1,784 commercial applicators and 70,000 private applicators.

At the present time, it is anticipated that there will be very little growth in state agency pesticide programs. Some growth has occured since 1975 in response to Amended FIFRA. Once the private sector certification program is finished, little growth in this area is likely to occur. Certain demand adjustments may have to be made, however, leading to minimal growth.

IV. POTABLE WATER

Louisiana is a state with many good water resources. Throughout Louisiana, most public water supplies are obtained from groundwater. Groundwater supplies are more frequently available, except in coastal portions of the state, and generally require less treatment than surface water. Surface water is generally abundant although its quality is more dependent on the source. Rivers such as the Mississippi, Atchafalaya, Pearl, Sabine and Red, and lakes such as Toledo Bend and Maurepas are the major surface fresh water bodies in the state.

Regulatory and enforcement activity for the state's potable water supplies is primarily the responsibility of the Bureau of Environmental Health within the Department of Health. The Bureau of Community Health Services within the same department also has a role in ensuring high quality water supplies.

Expansion of the state staff to fulfill the safe drinking water program will be concluded in 1977. While present workforce needs in the area are fairly clear, future needs cannot be determined until the agency becomes operational. Engineers and chemists will fill most professional positions. Louisiana has a well-developed program of water supply and distribution operating personnel, and it appears to be capable of meeting future needs in the area.

V. RADIATION

The State of Louisiana has a broad and comprehensive program of radiation control. There are several nuclear generating stations within the state and several more proposed over the next five years. Louisiana has been an agreement state since 1967. As of December 31, 1975, the state had 463 licenses for by-products, sources, and special nuclear materials. The NRC maintains 15 of these.

The primary responsibility for radiation control in Louisiana has been allocated as of 1973 to the Department of Conservation, Natural Resources and Energy, Division of Radiation Control. The Division of Radiation Control has had no growth during the past two years. Four additional positions have been requested, however, for fiscal year 1977. The workforce, other than the state personnel, should experience an overall increase of three percent per annum over the next five years.

Career options will be available in the radiation control field in Louisiana. The most numerous opportunities will be at the degreed level and secondly at the technician level. The field of radiation control requires educational achievements and practical experience. Less than two years of techncial training will make finding a job difficult. Degreed and post-graduate personnel will see availability of careers in this field.

VI. SOLID WASTE

Louisiana is constrained in solid waste disposal options due primarily to the physical characteristics of the state. Although the state is described as 48,523 square miles, only 35,068 are considered dry land. The remainder of the area is water, salt marsh, fresh water marsh or swamp. Solid waste disposal in wetland areas presents unique and exceedingly difficult engineering problems. Probably the most prevalent problem in Louisiana regarding solid waste management is the availability of disposal sites. In many areas there is a scarcity and absence of cover soil at the site.

The State Department of Health, Bureau of Environmental Health, Solid Waste and Vector Control Section administers the program of solid waste management throughout the State of Louisiana. Other Divisions of the Department and agencies contribute resources of workforce and time although usually to a limited degree.

Department of Health personnel have indicated that there are approximately 250 to 300 sanitarians working across the state in solid waste. A conservative estimate of jumpers and drivers and miscellaneous personnel statewide would be 1,000 persons.

The program is now, was previously, and perhaps will continue to be understaffed due to inadequate funding. However, increases of approximately 15% per annum may occur at this level. A three to five percent per annum increase is anticipated in statewide personnel.

VII. WASTEWATER

Two state agencies share responsibility for the bulk of Louisiana's water pollution control program. The Stream Control Commission is the state lead agency in water pollution matters and performs both regulatory and coordination functions.

The Bureau of Environmental Health within the Department of Health also has significant water pollution control authority. Municipal waste source control, construction grant fund administration, and sewage treatment project approval are among the main activities of this Bureau.

The two major agencies in water pollution control, the Division of Water Pollution Control and the Bureau of Environmental Health, total 78 personnel, and there are 585 certified wastewater operators in Louisiana in four different classifications.

The Division of Water Pollution Control had a staff of only 15 persons in 1970, and has undergone significant growth in 1975 and 1976. Very little growth is expected in this Division over the next five years. Any hiring will be to replace turnover.

While they were unable to make year-by-year projections, Bureau of Environmental Health personnel do anticipate workforce growth. The Bureau is understaffed by 25 positions at present and it is hoped that these positions can be added over the next five years along with other needs as they arise.

VIII. ENERGY

Louisiana is an energy producing state and vast mineral reserves play a major role in the state's economy. Louisiana ranks second only to Texas in value of minerals produced due, for the most part, to oil and gas reserves.

The state lead agency in energy-related activities has been identified as the Louisiana Division of Natural Resources and Energy. This Division is under the aegis of the Department of Conservation. The Division had 99 positions authorized but only 37 were filled. One of the main problems identified in Louisiana is the comparatively low salary scale. The salary contributes heavily to the vacancy rate. The turnover rate is high, also, by comparison to some of the other environmental control categories. No firm figures are available at present for the private sector.

There is little evidence to support staff increases in the Division over the next few years, although responsibilities will continue to increase. Slight increases in the private sector should indicate a two percent per annum growth.

The workforce involved in energy pollution control and abatement will experience incremental increases over the next three to five years. New career options could emerge from the energy related activities of the state. These, most probably, will be at the degreed level in the scientific and technologically advancing fields.

STATE OF LOUISIANA

National Environmental/Energy Workforce Assessment
Pollution Control & Abatement Personnel
Projected Workforce Requirements (1976-1981)
(estimated)

Environmental Area	1976	1977	1978	1979	1980	1981	%/annum growth (average)
AIR[1]	27	27	27	27	27	27	0%
NOISE	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PESTICIDES[2]	1,783	1,789	1,790	1,791	1,791	1,791	N/A
POTABLE WATER[3]	926	972	1,020	1,070	1,123	1,178	5%
RADIATION[4]	5,014	5,164	5,323	5,482	5,646	5,815	3%
SOLID WASTE	1,007	1,037	1,073	1,106	1,241	1,275	5%
WASTEWATER[5]	663	692	723	755	789	825	4%
ENERGY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTALS	9,420	9,681	9,956	10,231	10,617	10,911	3%

[1]Does not include private sector.

[2]Does not include private applicators; reflects no growth in commercial applicators.

[3]Reflects no growth at state level.

[4]The above includes some 5,000 persons involved in the usage of radioactive materials.

[5]Does not include state agency projections.

EDUCATION

Environmental course offerings are more readily available in Louisiana than are degree programs. The state has at least 25 post-secondary educational institutions not including the multi-campus schools, and several of these offer environmentally related programs.

The Louisiana State University at Baton Rouge, through the College of Agriculture, conducts a program in Environmental Health which can lead to a Bachelor of Science degree. In addition, LSU, through the Division of Continuing Education, maintains several institutes. The Institute for Environmental Sciences is a center for the study of problems associated with air and water pollution. The Louisiana Water Resources Research Institute emphasizes projects that have a significant training feature for students in the fields of hydrogeology, surface and groundwater, and the legal, engineering, and economic phases of water development.

The Nuclear Science Center at LSU utilizes specialized equipment and laboratories to accommodate many educational and research activities which utilize nuclear energy technology. Located also at LSU is the School of Environmental Design. This School coordinates those disciplines which traditionally have been responsible for the design and management of the environment.

Mcneese State University at Lake Charles offers an Environmental Science curriculum which leads to the Bachelor of Science and the Master of Science degree. Tulane offers several post graduate programs.

LEGISLATION

The environmental/energy legislation for Louisiana was obtained by request from various agency personnel and through various library references. Summaries of the legislation deemed most relevant to the eight subject areas of the workforce assessment were prepared, and are included in the respective state reports. The following list of laws represents virtually all environmental legislation for the state. Only certain of the following laws were summarized; the list is presented to show, by title, the kinds of laws which have been enacted.

Council on Environmental Quality Act

Air Control Act

Pesticide Control Act

Industrial Waste Disposal Act

Stream Control Commission Law

Water Supply and Sewerage System Law

Natural Resources and Energy Act of 1973

National Environmental Energy Workforce Assessment

Phase I

LOUISIANA

State Report

13

STATE PROFILE

The "Pelican State", a land mass of 48,523 square miles, has an average elevation of 100 feet above sea level, with the lowest elevation in the state located at New Orleans, 15 feet below sea level. Louisiana is a haven for sportsmen, with 7,400 miles of navigable waterways, numerous parks, and abundant wildlife.

Louisiana's climate includes hot, humid summers and short, mild winters. The temperature in the coastal regions is moderated in the summer by almost daily showers. Tropical cyclones, some of hurricane intensity, and tornadoes strike the state with relative frequency.

The 1970 census population was 3,643,180, an increase of 11.8% from 1960. The 1970 population density was 81.0 persons per square mile. The urban population composes 66%, while 44% is rural. The student population consists of over 725,000, enrolled in Louisiana universities and colleges.

Cities include: New Orleans, a major port and transportation center; Shreveport, a trade and communications center; Baton Rouge, the capital and center for port activities and the petroleum and chemical industries; and Lake Charles, an agricultural and oil shipping center with a large petrochemical industry.

The mineral resources of Louisiana are one of its most valuable assets. In a 1970 report, Louisiana was ranked second to Texas in total production of petroleum, natural gas and natural gas liquids, accounting for 17.1% of the total U.S. production. Hydrocarbon fuels provided 95% of the total value of mineral output in Louisiana.

LOUISIANA POLLUTION CONTROL AND ABATEMENT AGENCIES

There are several agencies in Louisiana with responsibilities in the area of pollution control and abatement. The agencies included are:

- Louisiana Health & Human Resources Administration, Division of Health
- Louisiana Department of Agriculture
- Louisiana Department of Conservation, Natural Resources and Energy Division.

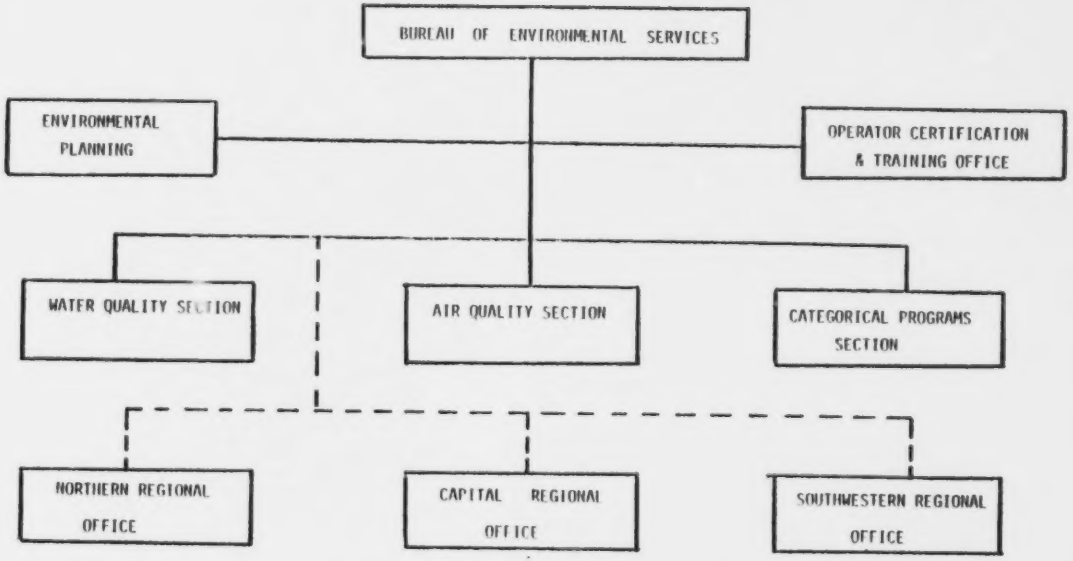
Organizational charts are included in the following pages.

STATE OF LOUISIANA

HEALTH & HUMAN RESOURCES ADMINISTRATION

BUREAU OF ENVIRONMENTAL SERVICES

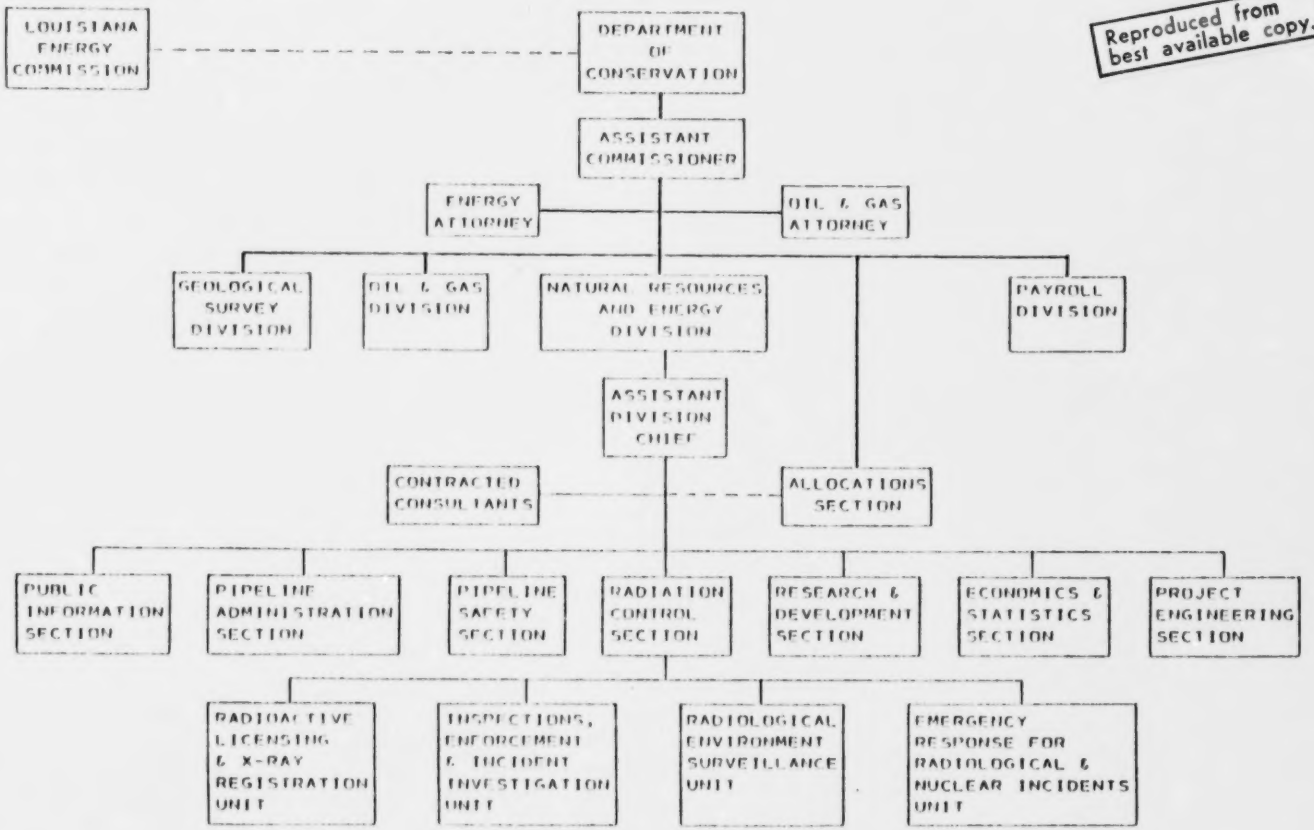
Figure 1



STATE OF LOUISIANA

DEPARTMENT OF CONSERVATION - NATURAL RESOURCES & ENERGY DIVISION

Figure 7 Organizational Chart



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Pollution Control and Abatement Programs

I. AIR

A. Introduction

The State of Louisiana does not have widespread and serious air pollution problems when compared to other states. There are several densely populated areas in the state which contribute to the decline of air quality in the particular area. Problem areas in Louisiana are Baton Rouge, New Orleans, the corridor which extends along the Mississippi between these two cities, and the Lake Charles-Westlake area. One of the major factors contributing to Louisiana's relative lack of serious air quality problems is the utilization of clean natural gas for power generation and space heating. Other states use large quantities of coal which contributes to the decline of air quality.

Prior to 1964, the state's air pollution control and abatement program was limited to one air sampling station at New Orleans. Every other year a sampling station would be established at Baton Rouge, Lake Charles and Shreveport. To conduct this program one employee from the State Department of Health was allocated part-time.

In 1964, however, the Louisiana Air Control Commission was established by Act 259 of the legislature. This Commission is the exclusive agency for control of air pollution in the state. By 1970, the Commission had been enlarged and today, is an air control agency with the capability and potential both to achieve and maintain air quality standards which are conducive to the health and well being of the citizenry.

The Air Control Commission includes the following members:

- State Health Officer (chairman);
- Director of the State Board of Commerce & Industry;
- Commissioner of the Department of Agriculture;
- President of the Police Jury Association;
- Four persons from the Louisiana Manufacturers Association and the Municipal Association; and,
- Director, Division of Health Maintenance and Ambulatory Patient Services (Technical Secretary).

The state has been divided into three Air Quality Control Regions. Louisiana's air quality State Implementation Plan (SIP) was partially rejected by the U.S. Environmental Protection Agency. Currently the state is revising the Plan.

The Louisiana Attorney General's Office has indicated that the state's air pollution laws are difficult to enforce because they were written in such broad teminology. The state statutes currently define violation of pollution standards in a way which leaves the state with limited enforcement capabilities.

B. Workforce Profile

The Air Control Commission is contained within the Division of Health Maintenance, and the Bureau of Environmental Health, Air Control Section, is the responsible body of the Division. The activities and responsibilities of the Air Quality Section are included in the following three branches: Field Investigations, Program Operations, and Technical Assistance.

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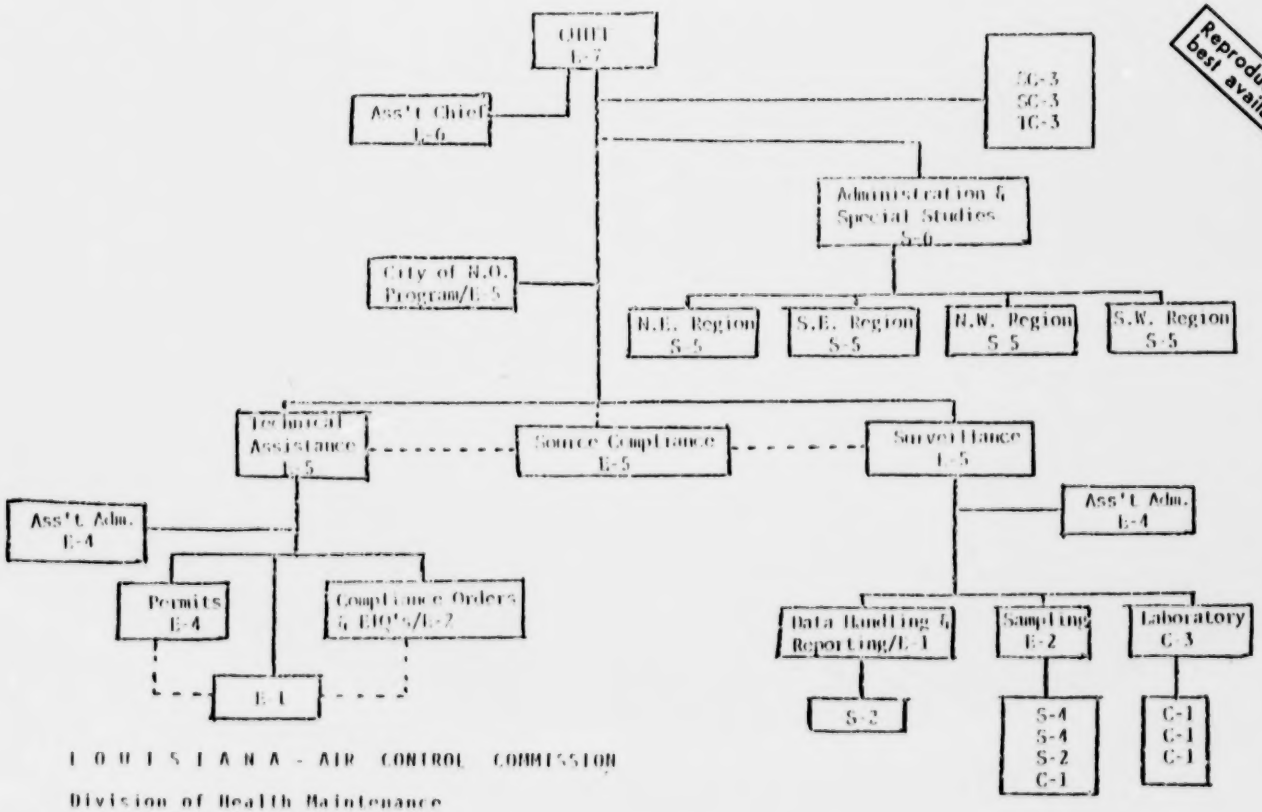

L O U I S I A N A - AIR CONTROL COMMISSION

Division of Health Maintenance
Bureau of Environmental Health
Air Control Section - Organizational Chart

Figure 3

The Field Investigations Branch monitors for settleable solids (dustfall), suspended particulates and pollutant gases. A variety of equipment is utilized and samples are tested at the Section's laboratory. This branch is required to inspect all major industrial sources of air pollution. Where corrective measures are not taken, enforcement proceedings are initiated.

The Program Operations Branch is responsible for ensuring that corrective or preventive actions are taken by regulation violators to eliminate air pollution. One major objective of this Branch has been the elimination of one of the state's air pollution causes - open burning. This Branch has effected a 75% reduction of open burning. The Branch has also been successful in the control of air pollution from cotton gins and the lumber industry.

The Technical Assistance Branch is responsible for processing all applications for emissions from incoming new industries. This Branch also developed the ambient air quality and emission standards adopted by Louisiana as required in the designation of the Air Quality Control Regions (AQCR).

The following table details the current workforce of the Air Quality Section.

TABLE I

LOUISIANA DIVISION OF HEALTH MAINTENANCE

Bureau of Environmental Health
Air Quality Section
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Engineer	13	2%
Sanitarian	9	2%
Chemist	5	2%
TOTAL	27	2%

Workforce figures for the private sector are most difficult to assign and were not readily available at the time of this assessment.

C. Workforce Projections

Information pertaining to workforce projections as well as to the workforce profile was obtained through on-site and telephone interviews with the Air Quality Section personnel.

Personnel have estimated a no growth pattern for the Air Quality Section over the next three to five years although program activities and responsibilities are increasing. The no growth projection is predicated on restricted state funding.

The turnover rate should continue to be quite minimal over the next few years. To date, this Section maintains the lowest turnover rate in the Environmental Health Bureau.

D. Training and Certification

New entrants to this Section undergo several weeks of specialized training with an experienced member of the staff. In addition, mandatory weekly seminars are presented to air personnel which draw upon various areas of expertise throughout the state. Special projects and guest speakers from outside the Section, mainly from industry and universities, are utilized. Federal funding has declined so the Section is unable to send the majority of the air personnel to training seminars, especially when held out of state.

The staff is encouraged to continue their formal education in pursuit of higher degrees through part-time participation at accredited universities.

E. Career Potential

Career opportunities will be available to a very limited degree at the state and local level. Private industry will continue to offer better salary scales and the majority of job openings will be found in that sector. Computer expertise and technology will continue to offer excellent job opportunities where openings are available.

F. Conclusion

State regulations which have been defined as too lenient and understaffing of the Air Quality Section are viewed as the major problems in Louisiana's air quality program. Difficulty in filling allocated positions is a problem not unique to this Section.

The monitoring program will continue to expand as new sampling stations and equipment are utilized. Each additional resource improves and expands the increasingly comprehensive picture of Louisiana air quality. Increased efforts will be brought to bear on the problems of motor vehicle emissions. The addition of anti-pollution devices and upgrade training for auto mechanics will assist in the program aimed at the control of excessive visible emissions from all motor vehicles.

Although a no growth pattern has been estimated for the Air Quality Section over the next three to five years, there is a real need for greatly increased personnel resources. The current staffing levels according to EPA, amount to less than one half of EPA's estimate of the personnel needs.

II. NOISE

A. Introduction

Currently, in Louisiana there is no state legislation regarding noise pollution control and abatement. Because no legislation exists there is no agency with authority to direct a noise program on the state level.

Under the Noise Control Act of 1972, the federal government was granted authority to set regulations to control certain sources of noise. These regulations currently affect interstate motor carriers, for example, buses and trucks with a weight in access of 10,000 pounds. When the State of Louisiana embarks upon a state noise program and legislation is passed, these new noise codes would have to be consistent with the federal law.

B. Workforce Profile

Due to the fact that the state does not conduct a noise pollution control and abatement program, there is no workforce to profile at this level. There are two cities which currently have municipal noise ordinances. The following table details these communities.

TABLE II

STATE OF LOUISIANA

Municipal Noise Ordinances
(1976)

COMMUNITY		ORDINANCE								TOTAL		
		Aircraft	Building	Construction	Nuisance	Railroad	Vehicle	Rec./Vehicle	Zoning	a	b	
Baton Rouge				b	b		b	b		0	4	
New Orleans					b				b	0	2	
TOTAL	(a)	0	0	0	0	0	0	0	0	0	0	
	(b)	0	0	1	2	0	1	1	1	0	6	

KEY: a = regulation includes acoustical criteria;
b = regulation does not include acoustical criteria.

SOURCE: Sound & Vibration, December 1975. Clifford R. Bragdon, Contributing Editor.

The table above depicts the municipal noise ordinances across the State of Louisiana. The table indicates two types of regulations. The regulations with acoustical criteria are referred to as performance type regulations. Those regulations without acoustical criteria are non-quantitative and therefore, exceedingly difficult to enforce.

Ordinarily the workforce at the local level and in the private sector, also, is composed of persons who are utilized in more than one area. For example, law enforcement officials are the usual major component of this workforce and these personnel have other responsibilities apart from noise pollution control and abatement.

C. Workforce Projections

The noise pollution control and abatement field in Louisiana will see minor increases within the next few years. As populations increase and people become more aware of the dangers to health of noise pollution, a workforce will emerge.

D. Training and Certification

At present there is no training in this area in Louisiana. The universities and colleges will begin to establish the academic components specifically tailored for environmental noise control only if programs begin to emerge within the state.

E. Career Potential

Career opportunities will be exceedingly limited in this field in Louisiana at least until 1980. By the early 1980's, programs on the municipal level and in private industry will begin to develop somewhat, which should present increased opportunities.

F. Conclusion

The noise pollution control and abatement acitivites in the State of Louisiana are currently at the municipal level. For the most part,

these programs utilize a pre-existing workforce, for example, law enforcement officials. These activities are predominantly restricted to enforcement activities.

Workforce profiles and projections are somewhat sketchy at this time. A great deal of interest has not been displayed by the citizenry regarding the establishment of a noise control component of the state government.

The U.S. Environmental Protection Agency and the National Institute of Municipal Law Officers have drafted a model noise control ordinance which communities in Louisiana would find helpful should the decision be made to develop noise codes. Baton Rouge and New Orleans both have populations in excess of 100,000. The model ordinance is designed for cities of this size.

III. PESTICIDES

A. Introduction

The state lead agency in Louisiana for regulating the use and control of pesticides is the Department of Agriculture. The Bureau of Entomology Services, within the Department, has responsibility for administering the Structural Pest Control Law and regulations; the Bureau of Technical Services administers the Louisiana Pesticide Control Act which is more agriculturally related.

The Structural Pest Control Commission, through the Commissioner of Agriculture who serves as its chairman, enforces and administers the Structural Pest Control Law. The law prohibits unlicensed persons from performing structural pest control work, particularly that work relating to wood-destroying organisms. Provision is made in the law for the Commission to examine applicants for licenses and to issue licenses to qualified persons.

The Commissioner of Agriculture also has major responsibility for the enforcement of the Louisiana Pesticide Control Act. Powers granted to the Commissioner under this Act include rulemaking, sample-testing, and designating pests and restricted-use pesticides. Also contained in the Act are provisions for the certification of commercial and private applicators and pest management consultants.

The Bureau of Technical Services within the Department of Agriculture has been designated as responsible for pesticide applicator certification and training. Recent training and certification activities have been carried out jointly by the Bureau and by the state Extension Service. The Bureau works closely with agricultural personnel at Louisiana State University in this regard.

When the use of pesticides affects other environmental concerns, the Department of Agriculture will be closely involved. The particular agency most likely to be affected is the Bureau of Environmental Health because of pesticide run-off causing water and land pollution problems.

B. Workforce Profile

The 1972 amendments to the Federal Insecticide, Fungicide, and Rodenticide Act have had a great impact in the private sector of pesticide use and control. In particular the certification requirements for the users of restricted-use pesticides have increased the personnel needs in this area.

A staff of 34 persons is currently employed in the two bureaus of the Department of Agriculture; 25 are in the Bureau of Technical Services and 8 are in the Bureau of Entomology Services. All but 2 of these positions are professionals. Additional personnel from the Louisiana Extension Service are involved in the applicator certification effort, although no information is available regarding exact numbers.

As shown in the following table, there are basically three classifications of certification: private applicators, commercial applicators, and consultants. Custom applicators, as defined in the Act, are included with commercial applicators. While the figures for the private sector are approximate, it is estimated that these numbers represent 90% of those who will ultimately be certified. It should be noted, from an educational workforce perspective, that no training is required for private applicators.

The following table depicts the current staffing levels for the Department of Agriculture as well as the estimated workforce profile for the private sector.

TABLE III

STATE OF LOUISIANA

Pesticides Personnel
Current (1976) Staffing Level

Position	1976
Bureau of Entomology Services	8
Bureau of Technical Services	25
Private Applicators	170,000
Commercial Applicators	1,500
Consultants	250
TOTAL	171,783

The Consultants noted in the above table are persons active in supervising, training or advising in the pesticides area. The number of persons certified in this category is difficult to determine, and it is estimated that there could be as many as 500 during a particular season.

Training activities for applicator certification have recently been carried on jointly by the Bureau of Technical Services and the state Extension service. This cooperative training is expected to continue on a reduced level as new applicator and re-certification needs are met.

C. Workforce Projections

At the present time, it is anticipated that there will be very little growth in state agency pesticide programs. Some growth has

occured since 1975 in response to Amended FIFRA; any growth that can presently be anticipated is also a result of this Act and its certification/training requirements.

The Bureau of Technical Services has added ten inspectors in the past year to reach its current level of 25. If current projections of thirty inspectors are borne out, the number of inspectors will have doubled from 1975 to 1979. All inspectors are required to have a B.S. degree, or its experience equivalent, and generally in an agricultural science area such as agronomy or botany. Because of the volume of laws and regulations and the potential litigation, the Bureau is expected to add a lawyer to its staff in the near future.

Turnover in the pesticide bureaus of the Department of Agriculture has been extremely low. Since 1975, the director of the Bureau of Technical Services is the only person who has left.

Projected staff growth for the state lead agency in pesticides is depicted in the following table:

TABLE IV

STATE OF LOUISIANA

Pesticides Personnel
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau of Entomology Services:								
Inspector	5	5	5	5	5	5	*	0%
Administrative	2	2	2	2	2	2	*	0%
Secretarial	1	1	1	1	1	1	N/A	0%

TABLE IV

(continued)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau of Technical Services:								
Inspector	25	29	29	30	30	30	10%	3%
Administrative	0	0	1	1	1	1	8%	20%
Attorney	0	1	1	1	1	1	0%	20%
Secretarial	0	0	1	1	1	1	N/A	8%
TOTAL	33	38	40	41	41	41	N/A	8%

Once the private sector certification program is finished with its initial effort, little growth in this area is likely to occur. Certain demand adjustments may have to be made leading to small amounts of growth in this area.

D. Training and Certification

The Bureau of Technical Services of the Department of Agriculture is joining with the Louisiana State University Extension Service to provide commercial and private applicator training. Local Department of Agriculture personnel will assist in training efforts for approximately 70,000 persons, mostly farmers, who will be certified. Certication is available in the following six categories: aerial applicators, agricultural applicators, commercial applicators, ground applicators, pest management consultants, and private applicators. Additional categories may be established by regulation.

Upgrade training for actual staff personnel is fairly limited and on-the-job training is implemented, particularly for field inspectors and investigators. Technical information on pesticides and their uses is provided to staff personnel to assist them in field work.

E. Career Potential

It appears that the demand for professionals and para-professionals in the pesticides control area in Louisiana will be relatively stable over the next five years. However, as new pesticides are developed and current pesticides are regulated, the need for special expertise in the use and effects of pesticides can be expected to rise. Particular problems which were cited include the need for control of the cotton bud worm and powder post beetle.

F. Conclusion

From a survey of the pesticide workforce activities and legislative requirements for the State of Louisiana, the following conclusions can be drawn:

- Major impact on the state lead agency has come as a result of Amended FIFRA requirements, particularly in certification and training.
- Except for persons added in response to Amended FIFRA, the workforce situation is expected to remain relatively stable through 1981.
- No significant new legislation or regulations which would affect workforce needs are anticipated.
- More detailed information on certified applicators will be available by October 1977.

IV. POTABLE WATER

A. Introduction

Louisiana has a richly-deserved reputation as a state with many good water resources. And as with most states, water is depended upon for a multitude of municipal, industrial, agricultural and recreational uses. Adequate supplies of good quality water are essential for sound planning and economic development.

Throughout Louisiana, most public water supplies are obtained from groundwater. Groundwater supplies are more frequently available, except in coastal portions of the state, and generally require less treatment than surface water. Surface water is generally abundant although its quality is more dependent on the source. Rivers such as the Mississippi, Atchafalaya, Pearl, Sabine and Red, and lakes such as Toledo Bend and Maurepas are the major surface fresh water bodies in the state.

Regulatory and enforcement activity for the state's potable water supplies is primarily the responsibility of the Bureau of Environmental Health within the Department of Health. The Bureau of Community Health Services within the same department also has a role in ensuring high quality water supplies. Other agencies whose basic role is the control of water pollution have an indirect role in safeguarding water supply sources.

B. Workforce Profile

The potable water supply program in the past has been handled by municipalities with supervisory assistance from the Department of Health. Under this program very few persons could be designated who were envolved full-time in water supply activities. Currently Louisiana is in the process of acquiring primacy under the Safe Drinking Water Act program. Efforts within the Bureau of Environmental Health are being expanded to comply with mandates of the Act. A proposal has been submitted to add a section of 16 positions with sole responsibility for safe drinking water matters.

The following table shows the breakdown of the new section by occupational category.

TABLE V

DEPARTMENT OF HEALTH

Bureau of Environmental Health
Safe Drinking Water Program
Current (1976) Staffing Level

Position	1976
Engineer	5
Chemist	3
Programmer	1
Planner	1
Other	6
Total	16

The planner position will be filled by an urban planner; engineering technicians may be substituted for some of the engineers. The "Other" category includes a key punch operator and a technical typist. Sanitary engineers will be sought.

Turnover for the new section cannot, of course, be determined at the present time; however, turnover for the entire Department of Health has stabilized recently following a period of heavy turnover.

The other major segment of the potable water workforce is composed of public water supply operating personnel. There are 910 certified public water operators in the state in four different classifications. No information is currently available on the number of operators in each class, but records on this are being compiled. All facilities are classified according to water treatment method, distribution system, and population served. The following table shows the basic operator qualifications for each classification.

TABLE VI

OPERATOR QUALIFICATIONS

Minimum Education (Ed.) and Experience (Exp.) Requirements in Years

	I		II		III		IV	
Operator Class	Ed.	Exp.	Ed.	Exp.	Ed.	Exp.	Ed.	Exp.
Water Production	12	1	12	2	14	3	16	4
Water Treatment	12	1	12	2	14	3	16	4
Water Distribution	12	1	12	2	14	3	16	4

Generally the experience requirement must be fulfilled in the same or next lower classification of facility. A program of experience-for-education and education-for-experience substitutions has been developed.

The above-noted number of operators does not include all facility personnel, nor does it accurately show operating personnel active at the time the certification law was enacted.

C. Workforce Projections

Immediate workforce projections are essentially the same as the Workforce Profile because a new section on drinking water supplies is being developed. Once the section is established, there will probably be very little growth over the next few years as role responsibilities and administrative functions become more clearly defined.

Normal agency turnover will necessitate the hiring of persons for positions as noted in the Workforce Profile material. Other growth will be partially dependent on new state legislation and the degree of primacy attained under the Safe Drinking Water Act.

Most requirements of the operator certification law are currently being met, and personnel anticipate an increase of perhaps 20 to 25 percent in the number of water supply operators. This growth will generally supplement facility staffs that are already in technical compliance with the law.

D. Training and Certification

Louisiana's mandatory operator certification law became effective in 1972, and most potable water training and certification activity is carried on pursuant to this act. The Bureau of Environmental Health coordinates training activities with several colleges in the state and with the Louisiana Conference on Water and Wastewater. In addition, the Bureau does the actual examination and issuance of certificates.

Training is normally offered five or six times per year at various points in the state as demand and budgets allow. Most classes are composed of from 25 to 30 students who receive instruction from Bureau

personnel, cooperating college professors, and other treatment plant operators. Sixty hours of training are included in most courses. The certification exam is generally offered only once per year at Louisiana State University with as many as 400 applicants from water supply and wastewater fields in attendance. The Louisiana Conference on Water and Wastewater offers a special three-day training and review course in conjunction with the examination.

E. Career Potential

Once the new safe drinking water program is established, career potential in the potable water public sector will be minimal. It is anticipated that the new section will be established during 1977. Engineers, particularly with a sanitary emphasis, and chemists will fill most professional positions; based on past history turnover will be highest in these areas resulting in some career prospects. Because the potable water effort is still being developed, no other career information is available.

F. Conclusion

Expansion of the staff to fulfill the safe drinking water program will be concluded in 1977. While present workforce needs in the area are fairly clear, future needs cannot be determined until the agency becomes operational. Engineers and chemists will fill most professional positions. Louisiana has a well-developed program of water supply and distribution operating personnel, and it appears to be capable of meeting future needs in the area, if proposed training programs are initiated and maintained.

ADDENDUM

The following information was made available by EPA regional personnel after final revisions of this section were completed.

Operator Training and Certification

During the first half of 1977, 46 water operators were certified. State personnel estimated that 246 water treatment plant operators of class 1, 2, and combination 1 and 2 need training in order to become permanently certified. This number represented 176 municipalities (500-1,000 population) and did not include the other smaller community or non-community supplies which were estimated to increase the number to approximately 1,000-2,000 additional operators who need training in Louisiana. In order to assist in meeting this training need, the EPA and the U.S. Office of Education, under an interagency agreement, offered a $12,000 grant to the Louisiana State Department of Education for developing a proposed program for water supply operator training.

Assumption of Primacy

Louisiana is one of the first three states in the Nation to have primary enforcement responsibility under the Safe Drinking Water Act. The legislation which passed in the latter part of 1976 amended Title 40 of the Louisiana Revised Statutes, with several favorable opinions by the Attorney General, and the adopted revisions to the State Sanitary Code, all resulted in Louisiana meeting all of the statutory and regulatory requirements for primacy. Primacy was granted to Louisiana in a letter dated May 19, 1977, from the EPA Administrator.

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V. RADIATION

A. Introduction

The State of Louisiana has a broad and comprehensive program of radiation control. There are several nuclear generating stations within the state and several more proposed over the next five years. In 1974, Louisiana and other members of the Southern State Nuclear Compact became signers of the Southeastern Mutual Radiological Assistance Plan (SMRAP). The SMRAP was formed in order to protect the health and safety of the citizens in the event of accidents occurring at nuclear facilities, or during transport of radioisotopes, nuclear fuel or radioactive waste.

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Louisiana has licensed the first facility for recovering uranium from phosphoric acid. The uranium recovered annually has been estimated to total 500,000 - 750,000 pounds. This would be sufficient to supply the annual fuel needs of one and a half 1,000 megawatt electric nuclear reactors. Other cooperative ventures of this nature are planned among the utility companies of the region.

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Louisiana is an "agreement" state. This refers to an agreement between the State of Louisiana and the U.S. Nuclear Regulatory Commission (NRC) in which certain of the Commission's responsibilities are transferred to the state under Section 274 of the Atomic Energy Act of 1956. Louisiana has been an agreement state since 1967. As of December 31, 1975, the state had 463 licenses for by-products, sources, and special nuclear materials. The NRC maintains 15 of these. These licenses and the ensuing workload have increased at the rate of 15% per year.

A major component of the radiation activities in the states is X-ray registration. These registrations are increasing at a 5% per annum rate.

B. Workforce Profile

The primary responsibility for radiation control in Louisiana has been allocated as of 1973 to the Department of Conservation, Natural Resources & Energy, Division of Radiation Control. (Refer to organizational Chart on following page)

The Division administers a program of radiation control activities by means of four major components:

- Radioactive Material Licensing and X-ray Registration;
- Inspections, Enforcement and Incident Investigation;
- Environmental Surveillance of Nuclear Power Facilities; and,
- Emergency Response Planning for Radiological Incidents and Nuclear Power Facilities.

The following table depicts the current workforce of the Division of Radiation Control.

TABLE VII

STATE OF LOUISIANA

Department of Conservation
Natural Resources & Energy
Division of Radiation Control
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Radiation Control Administrator	1	0%
Assistant Radiation Control Administrator	1	0%
Radiological Environmental Specialist	1	2%
Health Physicist	8	2%
Secretarial	3	N/A
TOTAL	14	1%

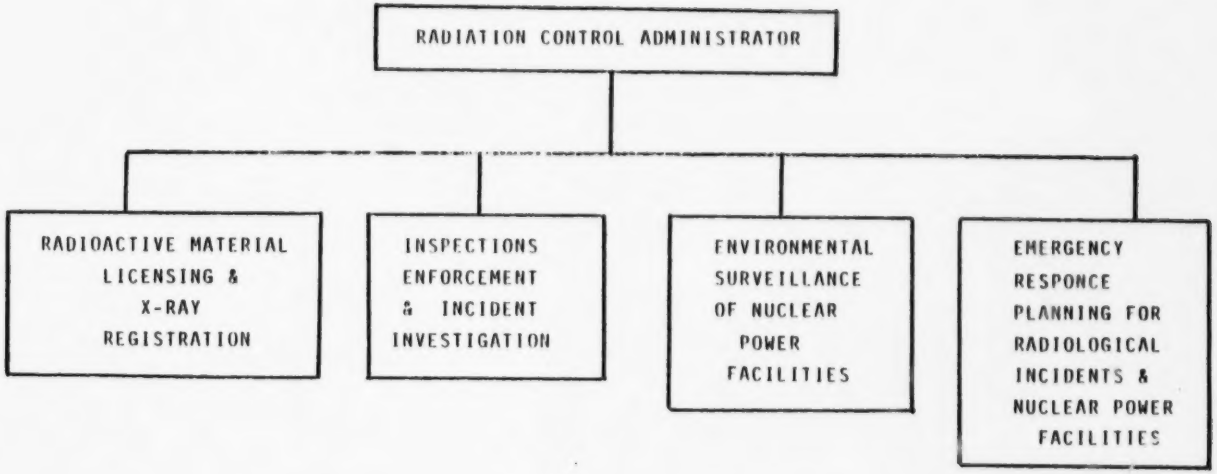
L O U I S I A N A

DEPARTMENT OF CONSERVATION

NATURAL RESOURCES & ENERGY DIVISION

Division of Radiation Control - Organizational Chart

Figure 4


RADIATION CONTROL ADMINISTRATOR
RADIOACTIVE MATERIAL LICENSING & X-RAY REGISTRATION
INSPECTIONS ENFORCEMENT & INCIDENT INVESTIGATION
ENVIRONMENTAL SURVEILLANCE OF NUCLEAR POWER FACILITIES
EMERGENCY RESPONCE PLANNING FOR RADIOLOGICAL INCIDENTS & NUCLEAR POWER FACILITIES

The reduction of radiation exposure to the citizens and the protection of the users is established by the following program activities:

- licensing the possession and use of radioactive materials in the state;
- registration of radiation producing machines;
- training of users;
- establishment of emergency response teams;
- monitoring of chemical plant effluents;
- establish baseline studies and monitor effluents from nuclear power reactors;
- inspection of radiation sources or machines (and facilities where located);
- evaluation of plans for radiation protection prior to construction;
- investigation of radioactive materials incidents involving excessive exposure of individuals;
- evaluation of methods of disposal for radioactive wastes;
- evaluation of all sealed sources and devices manufactured in the state;
- maintain Medical Advisory Committee;
- conduct educational/training programs;
- review and comment on federal rules and regulations;
- review plans for power companies nuclear reactors;
- maintain laboratory; and,
- develop new state regulations where needed.

Workforce profile as well as projection data were obtained by on-site interviews with personnel from the Division of Radiation Control. Sources indicate that as many as 5,000 to 6,000 persons are occupationally exposed

to radiation in the State of Louisiana, through medical, dental and veterinary facilities. There are currently no firm estimates as to the remainder of the workforce across the state involved in radiation control. As previously mentioned, however, the Division administers almost 500 licenses of radioactive materials. These licenses include 16 medical institutions and facilities, 16 colleges and universities, 49 industrial radiography, 15 well-logging and mineral exploration, and in 1975, seven licenses were issued for the implantation of nuclear powered cardiac pacemakers. A minimum of 600 persons (radiologists, nuclear physicists, and others) are involved in these activities.

C. Workforce Projections

The Division of Radiation Control has had no growth during the past two years. Four additional positions have been requested, however, for fiscal year 1977. The requests include: one radioisotope technologist, to provide assistance in the routine operation of the environmental radiological laboratory; and three health physicists to assist with the comprehensive radiological environmental surveillance program. The health physicists would also help to alleviate the workload increase due to radioactive material licensing, inspection, and enforcement.

At one time, average employment in this Division was 18 months duration, due to higher salary ranges in private industry. However, industrial needs have stabilized. Many state employees now wish to stay in Baton Rouge for a variety of reasons. Thus, turnover has decreased to a very low percentage and is projected to remain low for the next three to five years.

The following table depicts the above described workforce requirements. Division personnel anticipate no substantial growth 1978-1982.

TABLE VIII

STATE OF LOUISIANA

Department of Conservation
Natural Resources & Energy
Division of Radiation Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Radiation Control Administrator	1	1	1	1	1	1	0%	0%
Assistant Radiation Control Administrator	1	1	1	1	1	1	0%	0%
Radiological Environmental Specialist	1	1	1	1	1	1	2%	0%
Health Physicist	8	8	8	8	8	8	2%	0%
Radioisotope Technologist	0	0	1	1	1	1	*	20%
Health Physicist	0	0	3	3	3	3	*	60%
Secretarial	3	3	3	3	3	3	N/A	0%
TOTAL	14	14	18	18	18	18	1%	6%

* unavailable

The workforce, other than the above tabulated state personnel, should experience an overall increase of three percent per annum over the next five years.

D. Training and Certification

On-job-training consists of assigning an experienced man with the new employee. Where possible, the new personnel are sent to U.S. Environmental Protection Agency (EPA) seminars.

Several training programs are presented to various technician groups throughout the year. Refresher courses have been formulated for presentation to X-ray technologists and industrial radiographers.

The Division presents educational programs for the general public and for persons occupationally exposed to radiation. The general training and educational efforts on behalf of the Division are varied and include the following:

- Participation in local, regional, and national meetings, seminars, and training courses;
- Attendance at Oak Ridge, Tennessee, courses sponsored by NRC with topics: licensing, inspection and techniques;
- Lecturers at Louisiana State University Nuclear Science Center, Law Enforcement Institute and Fire College;
- Participate in Civil Defense lectures;
- Closed circuit television presentations to medical community regarding emergency procedures, licensing and other topics.

E. Career Potential

Career options will be available in the radiation control field in Louisiana. The most numerous opportunities will be at the degreed level and secondly at the technician level. The field of radiation control requires educational achievements and practical experience, occasionally. The less than two year technical level person will not find job opportunities to be abundant. Degreed and post-graduate personnel will see availability of careers in this field.

F. Conclusion

The Division of Radiation Control will be faced with new responsibilities in the next five years as nuclear power becomes more prevalent in Louisiana. Utilities must have air emergency response mechanisms for nuclear power facilities. These activities must be coordinated by the Division of Radiation Control, an additional responsibility.

Uranium phosphate and lignite development will pose problems for the Division, although programs have been prepared to deal with these energy related activities. Low level hazardous waste disposal is another responsibility of the Division which will have greater emphasis during the next five years. Increased responsibilities as well as programs necessitate increased staffing levels in the Division of Radiation Control. Health Physicists are the life blood of the Division. This occupational category should continue to present career opportunities over the next three to five years.

VI. SOLID WASTE

A. Introduction

The basic unit of government in Louisiana is the Parish which is similar to a County. Municipalities in the state do operate programs of collection and disposal of solid waste, but the final responsibilities for health standards is almost always allocated to the parish.

The State of Louisiana has developed a solid waste management plan. The state encourages parish self-determination but acts in a guidance capacity regarding such matters as solid waste management. Enforcement is a final resort and this responsibility has been allocated to the state.

Louisiana is constrained in solid waste disposal options primarily due to the physical characteristics of the state. Although the state is described as 48,523 square miles, only 35,068 are considered dry land. The remainder of the area is water, salt marsh, freshwater marsh or swamp. Solid waste disposal in wetland areas presents unique and exceedingly difficult engineering problems. Probably the most prevalent problem in Louisiana regarding solid waste management is the availability of disposal sites. In many areas there is a scarcity and absence of cover soil at the site. To compound this problem, frequently the soil types are not worked or combined without difficulty.

Drainage is another problem for the sanitary landfill. In the low-lying coastal areas the lack of adequate drainage and the high ground water tables are the major problems, whereas, in the higher areas, rapid

and uncontrolled drainage causes flash flooding, which may wash out landfill sites.

Other solid waste management problems which are not as prevalent elsewhere are: (1) Rainfall is abundant (50-60 inches per year) which stimulates profuse growth which results in large quantities of very wet cuttings and trimmings. (2) A long season of warm weather permits extended breeding seasons for flies, mosquitos and rodents. Vector control is necessarily an integral part of solid waste management. (3) High humidity affects crew collection personnel. (4) Due to land scarcity and subsequent high cost, transportation corridors are vital to possibly necessary long hauls. (5) Regulations regarding solid waste storage (in homes and businesses) are existent in 75% of the communities but for the most part are inadequate.

The major goal of the Louisiana solid waste management plan is the elimination of practices which endanger the public health and safety and degrade the environment. Major objectives of the plan include:

- Promotion of the regional approach to planning;
- Maintain reliable and continuing data on collection, generation, transportation and recycling;
- Conduct training for state, local and other solid waste management personnel;
- Increase enforcement and develop more stringent legislation;
- Promote research;
- Develop special programs for hazardous and toxic wastes; and,
- Further development of resource recovery.

B. Workforce Profile

The authority for statewide health matters has been allocated to the Louisiana State Board of Health. The State Department of Health, Bureau of Environmental Health, Solid Waste and Vector Control Section administers the program of solid waste management throughout the State of Louisiana. Other Divisions of the Department and agencies contribute resources of manpower and time although usually to a limited degree. The Divisions of Engineering, Air Quality Control, and Occupational Health from the Department of Health, along with the Louisiana Stream Control Commission, Louisiana Geological Survey, State Highway Department, State Planning Office, Department of Agriculture and Universities all contribute to an extent in the control of solid wastes in Louisiana.

The following table details the current solid waste management workforce at the state level.

TABLE IX

LOUISIANA DEPARTMENT OF HEALTH

Bureau of Environmental Health
Solid Waste Management Section
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Administrator	1	0%
Epidemiologist	1	1%
Vector Control Specialist	1	1%
Solid Waste Inspectors	3	2%
Secretarial	1	N/A
TOTAL	7	N/A

Department of Health personnel have indicated that there are approximately 250 to 300 Sanitarians working across the state in solid waste

management. However, these personnel are allocated to solid waste management only part-time.

The solid waste management state plan estimates 652 compactor type and 235 open trucks which are utilized for collection from domestic, commercial or industrial sources. The crew size is dependent upon the type of vehicle, the kind of waste involved and the population density. The normal crew consists of a driver and two jumpers while some rural routes utilize only one driver and one jumper. In some cases where large container units and specially equipped trucks are employed, the driver may handle the entire job. Thus, crew size can vary from one to three. A conservative estimate of jumpers and drivers and miscellaneous personnel statewide would be 1,000 persons.

Turnover rate is relatively low at 2% to 3% per annum within the Department's Solid Waste Management Section. Turnover in the remainder of the workforce is described as high. Recruitment is becoming more difficult. A 40% turnover may be estimated for this category of the workforce. The high turnover is compounded by a variety of factors: six day work weeks; low salaries; poor enforcement regarding container size and weight; weather and safety hazards.

C. Workforce Projections

The Solid Waste Management staff has experienced an increase of two persons from 1975. In that year, the staff was allocated to Solid Waste Management on a part-time basis.

The program is now, was previously, and perhaps will continue to be understaffed due to inadequate funding. Solid Waste Management is

receiving increased attention, however, especially with new legislation on the horizon. The following table projects workforce requirements to 1982 for the state personnel.

TABLE X

LOUISIANA DEPARTMENT OF HEALTH

Bureau of Environmental Health
Solid Waste Management Section
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Administrator	1	1	1	1	1	1	0%	0%
Epidemiologist	1	1	1	1	1	1	1%	0%
Vector Control Specialist	1	1	1	2	2	2	1%	20%
Solid Waste Inspectors	3	3	4	5	6	6	2%	16%
Sanitarian	0	0	2	2	2	2	*	20%
Engineer	0	0	2	2	2	2	*	20%
Secretarial	1	1	1	1	2	2	N/A	20%
TOTAL	7	7	12	14	16	16	N/A	20%

* unavailable

A three to five percent per annum increase is anticipated in statewide personnel. This will be due in part to increasing costs of equipment and more efficient utilization of the labor force as well as of the equipment.

D. Training and Certification

There is very little in the way of training in the solid waste field in Louisiana at present. Program personnel, when possible, attend seminars,

symposia, professional meetings and workshops. The state workforce, however, is constrained by insufficient staff and thus, absence of personnel even for brief periods, imposes hardships on the remainder of the Section.

The solid waste field holds the highest occupationally related accident rate. Safety is a vitally necessary component of the occupations. The equipment is heavy, mechanized and dangerous for those lacking in proper training. Although training of solid waste management personnel is not a high priority in most states, emphasis must be brought to bear on these occupational hazards.

E. Career Potential

There are a number of fields requiring various levels of skill and professional training which may develop in the future as a consequence of more stringent control and enforcement. Job designations will represent those positions specifically related to solid waste control practices. New positions will assume that landfill sites will increase in size and in number and that collection activities will increase, thereby impacting the diversity of tasks performed at the sites.

F. Conclusion

Significant progress has been made in upgrading solid waste management personnel and practices throughout Louisiana. Revenue Sharing funds facilitate development by allowing capitalization of regional and local projects. The state personnel are increasingly involved in technical assistance, review of operation plans and geological site evaluations.

Various solid waste management options are available in Louisiana. New Orleans generates 12,000 tons of solid waste daily; 650 tons is processed through mills to be pulverized for resource recovery, while 200 tons per day of consolidated solid waste is used for conventional landfilling. On the other hand, small communities may have difficulty in financing sanitary landfill operations. Parish-wide solid waste management is encouraged by means of formation of garbage districts or parish-wide organizations with funding for solid waste management.

Recognizing an alternative waste disposal method, the city of New Orleans has established a resource recovery site. The process involves hand-picked paper, shredding, air classification, magnetic and other mechanical separation. The output is paper, magnetic metals, aluminum, other non-ferrous metals and glass. Recovery I, as this plant is called, processes 650 tons per day. Resource recovery sites are thought to be one of the most important solutions to Louisiana's solid waste problems. Resource recovery will have an impact upon the workforce in the years to come. Increased levels of knowledge and skills upgrading are essential to this future component of the state's workforce.

VII. WASTEWATER

A. Introduction

Water is one of Louisiana's most valuable resources. The state is blessed with an abundance of water in the form of rivers, bayous, lakes and the extensive Gulf of Mexico coast. Louisiana's growth and industrial expansion is due in part to its water resources, particularly the deep water ports of the lower Mississippi River. But like many states, Louisiana's diversified and intensive use of its water has led to environmental pollution problems which must be solved if the health and economy of the state are to continue.

Two state agencies share responsibility for the bulk of Louisiana's water pollution control program. The Stream Control Commission is the state lead agency in water pollution matters and performs both regulatory and coordination functions. The Division of Water Pollution Control within the Department of Wildlife and Fisheries performs most technical and enforcement activities for the Commission. This Division establishes water quality and effluent standards, regulates waste discharge operations, and helps control pollution from oil field brines.

The Bureau of Environmental Health within the Department of Health also has significant water pollution control authority. Municipal waste source control, construction grant fund administration, and sewage treatment project approval are among the main activities of this Bureau. The Bureau is also responsible for the state's water supply and sewerage operator certification law and, with other branches of the Department of Health, engages in plant maintenance inspection and other domestic waste control functions.

As shown in the organizational chart following this section, a number of other state agencies also have water quality and water pollution related responsibilities. The Department of Agriculture provides assistance in soil and water conservation projects and does pesticide stream monitoring. The Department of Public Works has planning responsibility for water resource and water diversion projects. Additionally the Department of Conservation controls oil and gas related pollution and administers a permit system for subsurface injection of wastes.

B. Workforce Profile

The two major agenices in water pollution control, the Division of Water Pollution Control and the Bureau of Environmental Health, were contacted for workforce information. The composite of this information and contributions made by other agencies must be considered with regard to the total public sector wastewater and water pollution workforce.

The Division of Water Pollution Control within the Department of Wild Life and Fisheries currently has a staff of 38 persons. Most of the staff is located in Baton Rouge. The following table shows the composition of the staff by occupational category.

TABLE XI

DEPARTMENT OF WILDLIFE AND FISHERIES

Division of Water Pollution Control
Current (1976) Staffing Level

Position	1976
Engineer	4
Biologist	14

TABLE XI (Continued)

Chemist	4
Investigator	7
Administrator	2
Clerical	3
Other	4
TOTAL	38

Most engineers are either chemical engineers or civil engineers; education or experience in the sanitary area is also desirable. One administrator who is the Division Chief is also the Executive Secretary for the Stream Control Commission.

Within the Bureau of Environmental Health, the Section on Water Quality performs most water pollution control functions. This Section currently has a staff of 40 persons as set forth in the following table.

TABLE XII

DEPARTMENT OF HEATLH

Bureau of Environmental Health
Section on Water Quality
Current (1976) Staffing Level

Position	1976
Engineer	17
Engineer Aide	2
Sanitarian	8
Planner	2
Biologist	1
Clerical	10
TOTAL	40

Most of the engineer positions are filled by persons trained in mechanical, chemical, and civil fields. The sanitarians have some overlap with solid waste programs. The planners are urban planners, perhaps because of the municipal and domestic treatment emphasis of the agency.

There are 585 certified wastewater treatment operators in Louisiana in four different classifications. There is currently no breakdown available to show the number of operators in each class. Facilities are classified according to collection capacity, treatment employed, and population served. The following table shows the basic operator qualifications for each classification.

TABLE XIII

OPERATOR QUALIFICATIONS

Minimum Education (Ed.) and Experience (Exp.)
Requirements in Years

	I		II		III		IV	
Operator Class	Ed.	Exp.	Ed.	Exp.	Ed.	Exp.	Ed.	Exp.
Wastewater Collec.	12	1	12	2	-	-	-	-
Wastewater Treatmt.	12	1	12	2	14	3	16	4

Generally the experience requirement must be obtained in the same or next lower classification of facility. A program of experience-for-education and education-for-experience substitutions has been developed. There are no Classes III and IV for Wastewater Collection.

The above-noted number of operators does not include all facility personnel, nor does it accurately show operating personnel active at the time the certification law was enacted. More complete figures showing operators by Class are currently being compiled.

C. Workforce Projections

Workforce projections represent best professional judgements of agency personnel. The water pollution control field has undergone significant expansion in recent years, chiefly because of Public Law 92-500, and more changes can be expected to occur in the future.

The Division of Water Pollution Control had a staff of only 15 persons in 1970, and has undergone significant growth in 1975 and 1976. In 1975 the staff was expanded by 16 positions, most of whom were biologists. With a current staff in the 35 to 40 person range, very little growth is expected in this Division over the next five years. Any hiring will be to replace turnover which has been highest recently among biologists.

Division personnel who were interviewed felt that a good deal of growth in the water field may occur for planners. Such growth would be largely due to Section 208 activities but it is not yet determined which state agencies will be hiring planners for that program. More limited growth was seen for chemists and biologists as federal regulations become more scientifically-oriented.

While they were unable to make year-by-year projections, Bureau of Environmental Health personnel do anticipate workforce growth to fulfill present and future legislative mandates. The staff has increased by only three positions since 1972, and it is felt that the Bureau is understaffed by 25 positions at the present time. Most of the positions would be for engineers and it is hoped that they can be added over the next five years along with other needs as they arise.

Turnover in most Louisiana state agencies has been a minor problem in recent years, apparently because of salary structure. All indications are that the staffs are becoming more stable and turnover rates have been declining. Salaries and benefits have been improved and job markets for some occupations are becoming tighter.

An increase of 20 to 25 percent in the number of wastewater operators is projected over the next five years. Most requirements of the certification law are now being met, and much of the growth will supplement facilities that are under a properly certified operator at the present time.

D. Training and Certification

Operator certification became mandatory in Louisiana in 1972 and now represents the major training and certification activity in the wastewater field. The Section on Water Quality of the Bureau of Environmental Health coordinates training activities with several colleges in the state and the Louisiana Conference on Water and Wastewater. The Bureau itself is responsible for administering the certification examination.

Training is normally offered five or six times per year around the state as demand and budgets allow. Most classes are composed of approximately 30 students who receive instruction from Bureau personnel, cooperating college professors, and other treatment plant operators. Sixty hours of training are included in most courses. The certification examination is generally offered only once per year at Louisiana State University and may be taken by up to 400 persons.

The Louisiana Conference on Water and Wastewater offers a special three-day training and review course in conjunction with the examination.

Personnel in the Division of Water Pollution Control and in the Bureau of Environmental Health point out that some on-the-job training is a necessity for new employees. While most people who are hired have adequate qualification, learning specific job roles requires new employees to work with more experienced personnel. Other types of more formal upgrade training, such as EPA seminars, have been used in the past but have now been curtailed because of budget limitations.

E. Career Potential

Louisiana's two main water pollution control agencies indicate that moderate growth will occur in this field's public sector over the next five years. Less of this potential expansion will be in the form of turnover, which has stabilized in the past two years.

Engineers with a strong sanitary background appear to have the brightest career prospects. The numbers of biologists and life scientists hired in recent years has been significant, and careers in this field will probably be more limited in the future. One area cited as having tremendous growth potential over the next five years is for planners. Water management and Section 208 activities will lead to the need for many more planners, and career prospects in this area are extremely bright.

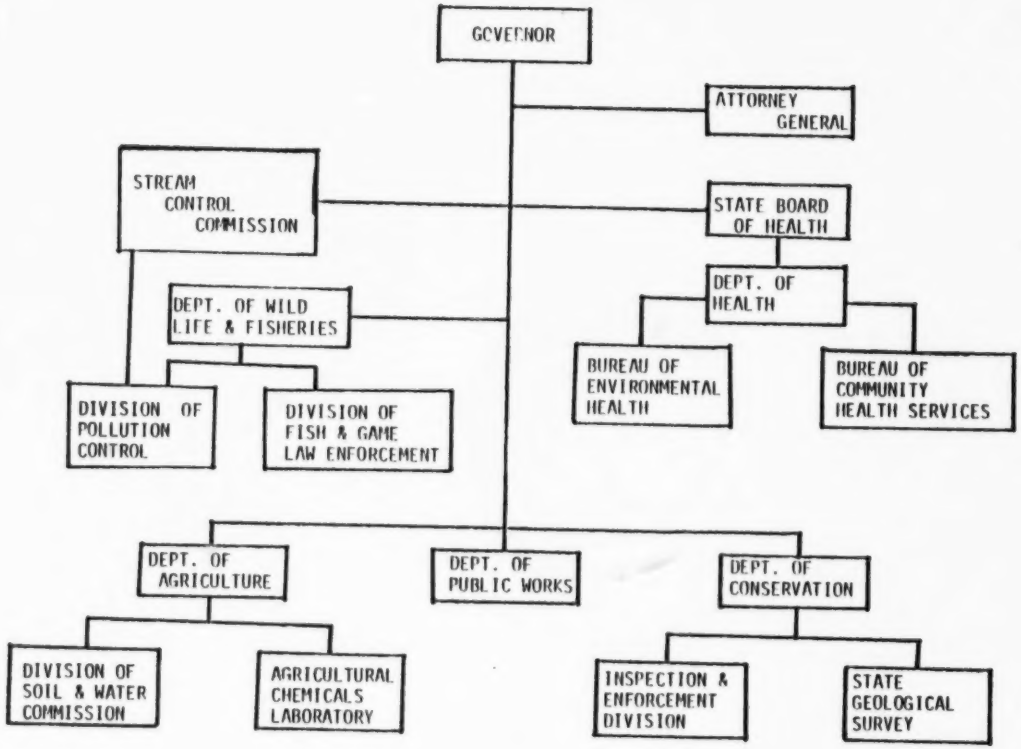
F. Conclusion

Staff needs to fulfill present requirements and greater planning activity should result in moderate workforce growth both in the Bureau of Environmental health and the Division of Water Pollution Control. Prospects are best for engineers and planners. Workforce needs in other state agencies involved in water pollution control may also cause some growth.

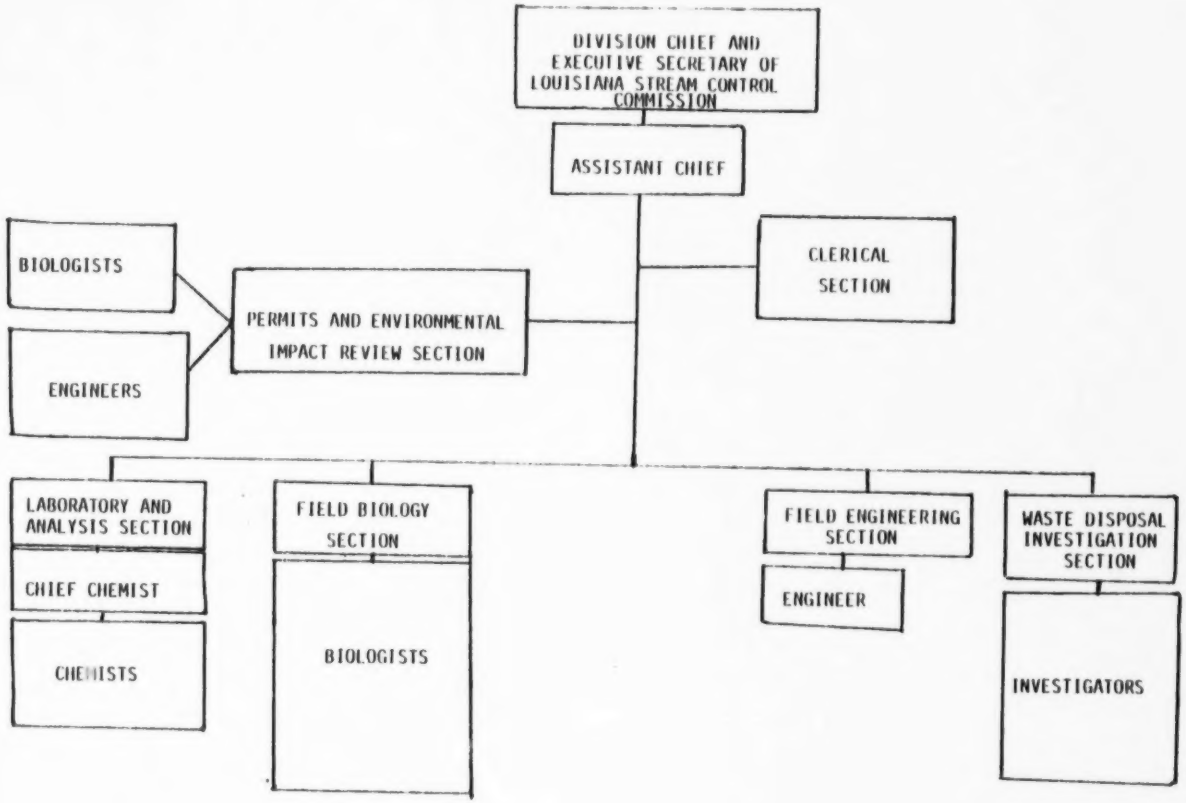
The state has a well-developed program of wastewater operator certification and this program can be expected to fill future needs. Upgrade training opportunities for other public sector personnel are more limited, chiefly because of budget limitations.

LOUISIANA WATER QUALITY AGENCIES

Figure 5



LOUISIANA WILDLIFE AND FISHERIES COMMISSION
DIVISION OF WATER POLLUTION CONTROL
Figure 6



VIII. ENERGY

A. Introduction

Louisiana is an energy producing state, and vast mineral reserves play a major role in the state's economy. Louisiana ranks second only to Texas in value of minerals produced, due, for the most part, to oil and gas reserves. Louisiana produces 25% of U.S. petroleum and is the third largest refiner of petroleum products. The state produces 33% of the U.S. natural gas, nearly 50% of the U.S. sulphur and is a major manufacturer of petrochemicals. Louisiana has begun exploration of lignite reserves located in and around De Soto and Sabine parishes. The state, however, will proceed with caution in the development of the lignite reserves. Pollution control and land reclamation are two areas of concern relative to the state's development of lignite. According to the Bureau of Mines publication #8719, Projects to Expand Fuel Sources in Western States, May, 1976, seven electric power/plants, two oil refineries and five natural gas processing plants are proposed for Louisiana. The figure on the following page identifies these projects.

B. Workforce Profile

The state lead agency in energy related activities has been identified as the Louisiana Division of Natural Resources and Energy. This Division is under the aegis of the Department of Conservation.

Information relative to workforce profiles and projections was obtained by telephone and mail survey, which were utilized as secondary sources in order to supplement on-site interviews.

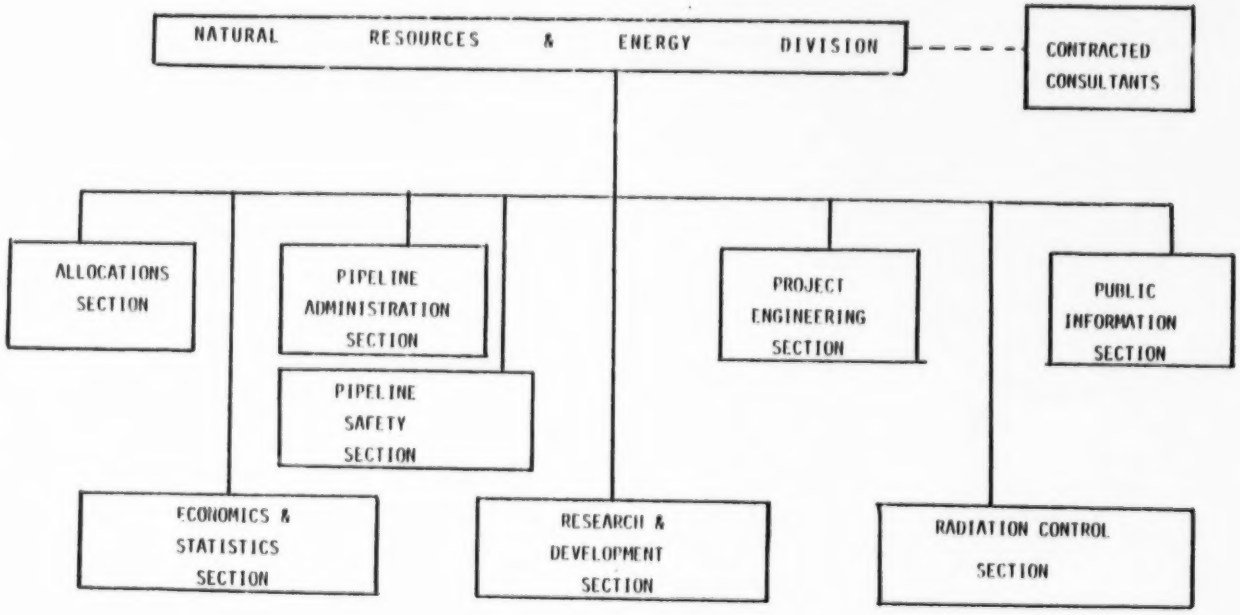
FUELS RELATED PROJECTS - SOURCE: Projects to Expand Fuel Sources in Western States, Bureau of Mines, May, 1976.

Figure 7

L O U I S I A N A - DEPARTMENT OF CONSERVATION

NATURAL RESOURCES & ENERGY DIVISION

Organizational Chart
Figure 8



The following details the Department of Conservation personnel allocated to energy related activities. No firm figures are available at present for the private sector.

TABLE XIV

LOUISIANA DEPARTMENT OF CONSERVATION

Natural Resources & Energy Division
Current (1976) Staffing Level

Position	(a)	(b)	(c)	(d)	(e)	1976	%/annum turnover (average)
Administrator	1	1	4	1	1	8	2%
Petroleum Allocation Officer	0	3	0	0	0	3	5%
Accountant	2	0	0	0	0	2	*
EDP Specialist	3	0	0	0	0	3	*
Engineer	0	0	1	1	3	5	10%
Inspector	0	0	4	0	0	4	0%
Technical Writer	0	0	0	1	0	1	2%
Statistician	3	0	0	0	0	3	*
Secretarial	2	2	3	2	1	8	N/A
TOTAL	11	6	12	5	5	37	N/A

(a) Economic & Statistics;
(b) Allocations;
(c) Pipeline Administration and Safety;
(d) Research & Development and Public Information;
(e) Project Engineering.
* unavailable

C. Workforce Projections

In the above table, 37 positions are described for the Natural Resources and Energy Division. However, 99 positions were authorized. One of the main problems identified in Louisiana is the comparatively low salary scale. The salary contributes heavily to the vacancy rate. The turnover rate is high, also, by comparison to some of the other environmental control categories.

There is little evidence to support staff increases in the Division over the next few years. Responsibilities, however, will continue to increase.

Slight increases in the private sector should indicate a two percent per annum growth.

D. Training and Certification

Training efforts are specifically directed toward the public and concentrate on conservation. In order to inform the citizenry, program guides for commercial buildings, transportation, residential buildings, and industry are published. Currently, the Division is developing an Energy Education Program for use by the state educational system. Workshops and other means of public information are also part of this program.

E. Career Potential

Careers will be available in this field in Louisiana. They will be on the technical level. The post-graduate, nuclear engineer will be in demand throughout the private sector.

Salaries will probably remain low at the state level, for the next few years. However, highly trained engineers and scientists will be in demand. Few opportunities appear to be emerging for non-degreed vocational/technical personnel.

F. Conclusion

Although Louisiana ranks second in value of minerals produced and is considered an energy resource rich state, supplies of oil and gas are

finite. Accordingly, excluding federally owned offshore production, Louisiana petroleum proven and estimated reserves have shown a steady decline since 1970. As oil production moves further offshore into federal waters, Louisiana will receive decreasing quantities of the revenues. However, utilizing due environmental controls, Louisiana will probably begin to develop lignite. According to the Louisiana Geological Survey, the reserves in De Soto Parish alone are equivalent to 1,300,000,000 barrels of oil. Certainly, the development of these reserves will have not only environmental impact, but also economic impacts upon the state.

Land use planning becomes an ever increasingly important aspect of the state's overall involvement in energy development and its subsequent pollution control and abatement. At present, only 3.5 percent of the state's land is urban and built up. One-half of this (1.7%) is extractive uses, mainly oil and gas.

The workforce involved in energy pollution control and abatement will experience incremental increases over the next three to five years. New career options could emerge from the energy related activities of the state. These, most probably, will be at the degreed level in the scientific and technologically advancing fields.

Selected Post Secondary Institutions With Formal Environmental Energy Programs

Environmental course offerings are more readily available in Louisiana than are degree programs. The state has at least 25 post-secondary educational institutions not including the multi-campus schools, and several of these offer environmentally related programs.

The Louisiana Technical University at Ruston, until recently, offered a Associate of Science (A.S.) in Environmental Technology. The curriculum emphasized water and wastewater technology. The program has been discontinued due to declining student interest.

The Louisiana State University at Baton Rouge through the College of Agriculture, conducts a program in Environmental Health which can lead to a Bachelor of Science degree. The College of Agriculture at LSU is an integral part of the land-grant college system. The College includes 16 departments and three schools with a faculty which exceeds 160. The Environmental Health program is conducted in cooperation with the Louisiana State Department of Health. The curriculum is an interdisciplinary course of study for students who desire basic training in environmental pollution control as related to the applied areas in public health of general sanitation, food-product control, and/or aquatic pollution. After the junior or senior year, a nine-week intern program of field work is available under the direction of the Louisiana Department of Health.

In addition, LSU, through the Division of Continuing Education, maintains several institutes. The Institute for Environmental Sciences is a center for the study of problems associated with air and water

pollution. Research will extend into other environmental problem areas which will represent the fields of agriculture, nutrition and food science.

Another institute, organized in 1964, conducts projects in water research. The Louisiana Water Resources Research Institute emphasizes projects that have a significant training feature for students in the fields of hydrogeology, surface and groundwater, and the legal, engineering, and economic phases of water development.

LSU established the Nuclear Science Center in 1960. Specialized equipment and laboratories accommodate many educational and research activities which utilize nuclear energy technology. Courses of study in nuclear science are available including nuclear options for Bachelor's degree programs in engineering science, industrial technology, and chemistry, and the Master of Science in Nuclear Engineering.

Located also at the Louisiana State University is the School of Environmental Design. This School coordinates those disciplines which traditionally have been responsible for the design and management of the environment. The School of Environmental Design is composed of three departments: Architecture, Fine Arts and Landscape Architecture. Degrees include the Bachelor of Architecture, the Bachelor of Interior Design, the Bachelor of Fine Arts and the Bachelor of Landscape Architecture. Graduates may work for the Master of Landscape Architecture.

Mcneese State University at Lake Charles offers an Environmental Science curriculum which leads to the Bachelor of Science. The same

program includes graduate level courses leading to the Master of Science degree.

At the two year level, Delgado Junior College in New Orleans has developed a three-pronged environmentally related program. The General Environmental Health Technology program trains technicians so that they may assist sanitarians and environmental engineers in the various environmental health occupations.

The primary objective of the Water and Wastewater technology program is to guide and help the student in acquiring theoretical knowledge and practical abilities needed to work successfully in operating public, municipal, and industrial water and wastewater treatment facilities and collection systems.

The Urban Pests Management Program is the third curriculum offering at Delgado. The program may result in a one year certificate or a two year Associate Degree in Environmental Health Technology.

Tulane University, School of Public Health and Tropical Medicine, located in New Orleans, offers training in environmental health. These post graduate programs include the Master of Public Health (M.P.H.) in Environmental Health, the M.P.H. and the Master's of Business Administration (M.B.A.) in Environmental Health Management, the Master of Science in Hygiene in Environmental Health and the Doctor of Science in Hygiene or Doctor of Public Health.

The following pages present an overview of the environmentally related programs in Louisiana. These descriptions include post-

secondary curriculae available at Mcneese State University, Louisiana State University, and Delgado Community College.

SENIOR INSTITUTIONS

Mcneese State University
Lake Charles, Louisiana

Program: Environmental Science (B.S.)*

Hours required for major: Semester - 35
Program Inception: 1967
Staff Size: Six professors, three part-time instructors (1 lawyer and 2 public health officials) (5 Ph.D., 1 M.S.)
Enrollment: 35
Graduates (1976): 9-12
Placement: The majority enter private industry and very few into state government due to low salary scales.

Graduate Work: Approximately 8% continue for advanced degrees

Courses

General Environmental Science
Water and Wastewater Technology
Physical Pollution
Food Microbiology
Chemical Processes
Air Pollution
Solid Waste
Field Study
Ocean Pollution
Environmental Toxicology
Environmental Impact Statements

*A Master's Degree in Environmental Science is also available; however, information was not collected on that program.

SENIOR INSTITUTIONS

Louisiana State University
Baton Rouge, Louisiana

Program: Environmental Health (B.S.)

Hours required for major: Semester - 134
Program Inception: 1969
Stass Size: 20 professors with approximately 90% having Ph.D.s
Enrollment: 16
Graduates (1976): 2-3
Placement: 2
Graduate Work: 1

Courses

Agriculture
Botany
Chemistry
Dairy Science or Animal Science or Poultry Science or Horticulture
English
Mathematics
Engineering
Food Science
Microbiology
Sociology
Biochemistry
Economics or Agricultural Economics
Entomology
Microbiology
Physics
Speech
Experimental Statistics

COMMUNITY COLLEGES/TECHNICAL INSTITUTIONS

Delgado Junior College
New Orleans, Louisiana

Program: General Environmental Health Technology (A.S.)

Hours required for major: Semester - 76
Program Inception: not available
Staff Size: Four full-time and six part-time instructors (1 Ph.D., 6 M.S., 2 B.S., and 1 A.S.)
Enrollment: 15
Graduates (1976): not available
Placement: not available
Graduate Work: not available

Courses

English
Chemistry and Lab
Introduction to Algebra
Principles of Environmental Health
Institutions of Environmental Health
Introduction to Air Pollution
Water Purification
Vector and Rodent Management Principles
Industrial Hygiene
Elementry Trigonometry
Introduction to Biology
Food Service Hygiene
Psychology
Epidemiology
Public Health Microbiology
Environmental Monitoring
Sociology
Practicum

Program: Environmental Health Technology - Water and Wastewater (Certificate and A.S.)

Hours required for major: Semester - 32
Program Inception: 1969
Staff Size: Four full-time and six part-time instructors (1 Ph.D., 6 M.S., 2 B.S., and 1 A.S.)
Enrollment: 15
Graduates (1976): not available
Placement: not available
Graduate Work: not available

Courses

Arithmetic
Water Purification

Introduction to Wastewater
Public Health Microbiology
Environmental Health Practicum
Introduction to Chemistry and Lab
Water Distribution and Water Collection
Advanced Wastewater Treatment
Environmental Health Practicum
English
Physics
Basic Drafting
Geometry
Elementary Surveying
Industrial Relations
Instrumentation
Management for Engineers

Program: Urban Pests Management (one year certificate of two year A.S. program)

Hours required for major: Semester - 76
Program Inception: 1973
Staff Size: Four full-time and six part-time instructors (1 Ph.D.) 6 M.S., 2 B.S., and 1 A.S.)
Enrollment: 5-10
Graduates (1976): not available
Placement: not availalbe
Graduate Work: not available

Courses

English
Chemistry
Biology of Urban Pests
Pesticides and Spray Equipment
Algebra
Mosquito Management
Vector Management
Pests and Pest-Damage
Safety
Epidemiology
Impact of Urban Pests on Health
Psychology
Horticulture
Equipment, Tools and Materials
Principles of Environmental Health
Seminar in Urban Pests
Introduction to Business
Horticulture
Environmental Health Practicum

State Legislation

LOUISIANA GENERAL

TITLE:

Council on Environmental Quality Act
Louisiana Statutes 40:2351

PURPOSE:

To provide for the protection and conservation of the land, air and water, and to maintain a total environment of superior quality.

DEFINITIONS:

ADMINISTERING AUTHORITY:

Governor's Council on Environmental Quality
Citizens Advisory Board

AUTHORIZATIONS:

To advise the governor on pollution control and resource management;
To serve as an environmental coordinating body;
To develop state environmental criteria;
To report annually to the governor and legislature.

LOUISIANA AIR

TITLE:

Air Control Act
Louisiana Statutes 40-12

PURPOSE:

To provide for the protection of the purity of the air of the state and to create an air control commission.

DEFINITIONS:

1. Air contaminant
2. Source
3. Undesirable levels
4. Commission
5. Person
6. Technical secretary

ADMINISTERING AUTHORITY:

Air Control Commission

AUTHORIZATIONS:

To develop a general plan for the proper control of state air;
To issue regulations pursuant to the act;
To enter and inspect property in enforcement of the act;
To undertake action to enforce the act;
To conduct or control studies and investigations;
To act as a state lead agency in air pollution matters;
To issue variances under the act.

PROHIBITED ACTS:

To violate any regulation or order issued pursuant to the act;
To violate any other provision of the act.

LOUISIANA ENERGY

TITLE:

Natural Resources and Energy Act of 1973
Louisiana Statutes 30-7

PURPOSE:

To protect and conserve the natural energy resources of the state, and prevent the physical and economic waste of such resources through the development of a comprehensive energy policy for the state.

DEFINITIONS:

1. Commissioner
2. Person
3. Gas
4. Intrastate natural gas
5. Intrastate pipeline
6. Intrastate natural gas transporter
7. Excess capacity
8. Common carrier gas pipeline
9. Natural gas company
10. Intrastate liquified petroleum gas

ADMINISTERING AUTHORITY:

Department of Conservation
Division of Natural Resources and Energy
Louisiana Energy Commission

AUTHORIZATIONS:

To consolidate state energy agencies, including those dealing with nuclear energy and radiation;
To act as the state lead agency in energy matters;
To develop and implement energy conservation programs;

AUTHORIZATIONS (Cont'd):

To issue regulations regarding energy allocation;
To regulate intrastate natural gas transportation and distribution;
To administer a pipeline bond program;
To develop emergency gas allocation plan;
To conduct studies and investigations regarding energy supplies and needs.

PROHIBITED ACTS:

To violate any act provision or order issued pursuant to the act;
To discriminate under emergency allocation plan.

PENALTIES:

Fines of up to $10,000 or one year imprisonment.

NRC AGREEMENT STATE: Yes

LOUISIANA PESTICIDES

TITLE:

Pesticide Control Act
Louisiana Statutes 3-12

PURPOSE:

To provide for the control of pesticides and the application of pesticides through the certification of applicators.

DEFINITIONS:

1. Commissioner
2. EPA
3. Person
4. Advisory commission
5. Agriculture commodity
6. Certified applicator
7. Commercial applicator
8. Competent
9. Custom applicator
10. Hazard
11. Nontarget organism
12. Pest
13. Pesticide
14. Pest management consultant
15. Pesticide dealer
16. Pesticide sales supervisor
17. Practicle knowledge
18. Private applicator
19. Pesticide with restricted use
20. Rules and regulations
21. Standard
22. Under the direct supervision of
23. Weed
24. Checker

ADMINISTERING AUTHORITY:

Department of Agriculture

AUTHORIZATIONS:

To issue rules and regulations pursuant to the act;
To declare restricted use pesticides;
To declare pests;
To enter and inspect property in enforcement of the act;
To establish certification standards;
To certify private and commercial applicators;

AUTHORIZATIONS (Cont'd):

To certify pesticide sales supervisors and license pesticide dealers;
To certify pest management consultants;
To issue stop sale orders.

CERTIFICATION OR LICENSING:

Private and commercial applicators must be certified;
Custom applicators and pesticide dealers must be licensed;
Special licensing provision for pest management consultants;
Various categories established and showing of competence is required.

PROHIBITED ACTS:

To use or apply restricted use pesticides without proper license or certification;
To violate the terms of any certificate or license;
To use or apply pesticides in an negligent manner;
To violate any other provisions of the act.

EXEMPTIONS:

Governmental units;
Household and structural pest control operators.

PENALTIES:

Fines of from $10 to $500.

LOUISIANA WASTE WATER

TITLE:

Stream Control Commission Law
Louisiana Statutes 56-3

PURPOSE:

To control waste disposal, to protect the streams and other water resources of the state.

DEFINITIONS:

1. Person
2. Waters of the state
3. Commission
4. Water pollution
5. Treatment works
6. Untreated wastes
7. Wastes

ADMINISTERING AUTHORITY:

Stream Control Commission

AUTHORIZATIONS:

To generally control waste disposal into waters of the state;
To issue regulations pursuant to the act;
To conduct investigations in order to carry out the act;
To enter and inspect property in enforcement of the act;
To establish pollution standards for waters of the state;
To act as the state lead agency in water pollution matters.

PROHIBITED ACTS:

To cause or allow any pollution discharge into waters of the state;
To cause or allow any pollution damaging to fishlife.

PENALTIES:

Fines of from $100 to $2,000 or one year imprisonment;
Willful violations - fines of up to $10,000;
Liability also imposed for replacement cost of damage actually caused.

LOUISIANA WASTE WATER

TITLE:

Water Supply and Sewerage System Law
Louisiana Statutes 40:1141

PURPOSE:

To provide a program for the certification of water supply and sewerage system operator certification,

DEFINITIONS:

1. Committee
2. Certificate
3. Louisiana conference
4. Operator
5. Operator in responsible charge
6. Sewage collection system
7. Sewage treatment plant
8. Sewerage system
9. State health officer
10. Waste water
11. Water distribution system
12. Water production facility
13. Water supply system
14. Water treatment plants

ADMINISTERING AUTHORITY:

State Department of Health
Committee of Certification

AUTHORIZATIONS:

To classify all water production, distribution, treatment and sewage facilities;
To establish certification standards;
To certify operators;
To issue regulations pursuant to the act.

CERTIFICATION OR LICENSING:

Operators must demonstrate competency and be certified in a classification corresponding to that of the facility; limited provisions for continuation of prior operators.

PROHIBITED ACTS:

To operate a water supply or sewerage system without certified operator;
To perform the duties of an operator without proper certification.

EXEMPTIONS:

Facilities serving less than 500 population; special provisions for extremely complex systems.

PENALTIES:

Fines of $100 or 10 days in jail.